

Notice of Allowability

Application No.

09/558,542

Examiner

Qamrun Nahar

Applicant(s)

GORTI ET AL.

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to supplemental amendment filed on 9/10/04.
2. ☒ The allowed claim(s) is/are 2,3,5-13 and 15-21.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

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1. This action is in response to the supplemental amendment filed on 9/10/04.
2. The amendment filed on 9/2/04 has been entered.
3. The objection to claim 21 is withdrawn in view of applicant's amendment.
4. The rejection under 35 U.S.C. 103(a) as being unpatentable over Benson (U.S. 5,301,325) in view of Ravichandran (U.S. 6,035,120) to claims 1-3, 5-13 and 15-21 is withdrawn in view of applicant's amendment.
5. Claim 1 has been canceled.
6. Claims 2, 3, 8-11, 13 and 18-21 have been amended.
7. Claims 2-3, 5-13 and 15-21 are pending.
8. Claims 2-3, 5-13 and 15-21 are allowed.

EXAMINER'S AMENDMENT

9. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jaquelin K. Spong (Reg. No. 52,241) on October 21, 2004.

The application has been amended as follows:

In the Claims:

11. (Currently Amended) A method for translating a source code of a source processor into a target code of a target processor, the method comprising:

identifying a target processor register capability;

dividing the source code into first source code blocks based on branches and loops in the source code,

subdividing the first source code blocks into second source code blocks based on target register capability, wherein: a largest number of source registers required in each second source code block being less than or equal to a maximum number of target registers that correspond to the source registers;

converting each of the second source code blocks directly into a corresponding target code block;

identifying source register types as data registers or address registers of the source processor and corresponding target registers of the target processor that correspond to each of the source register types;

selecting one or more identified source register types and one or more maximum numbers of corresponding target registers that correspond to the selected source register types; and

generating a source register map having a number of storage locations based on a number of instruction cycles required to update a source register.

21. (Currently Amended) A code translation device that translates a source code into a target code, the device comprising:

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a memory;

a source processor;

a target processor; and

a controller that:

divides the source code into first source code blocks based on branches and loops in the source code,

divides the first source code blocks into second source code blocks based on target register capability, wherein: a largest number of source registers required in each second source code block being less than or equal to a maximum number of target registers that correspond to the source registers, and

converts each of the second source code blocks directly into a corresponding target code block;

wherein the controller identifies source register types as data registers or address registers of the source processor and corresponding target registers of the target processor that correspond to each of the source register types,

selects one or more identified source register types and one or more maximum numbers of corresponding target registers that correspond to the selected source register types, and

generates a source register map having a number of storage locations based on a number of instruction cycles required to update a source register.

- END -

REASONS FOR ALLOWANCE

10. The following is an examiner's statement of reasons for allowance:

The cited prior art taken alone or in combination fail to teach, in combination with the other claimed limitations, subdividing the first source code blocks into second source code blocks based on target register capability, wherein: a largest number of source registers required in each second source code block being less than or equal to a maximum number of target registers that correspond to the source registers; identifying source register types as data registers or address registers of the source processor and corresponding target registers of the target processor that correspond to each of the source register types; selecting one or more identified source register types and one or more maximum numbers of corresponding target registers that correspond to the selected source register types as substantially recited in independent claims 11 and 21.

The closest cited prior arts, Benson (U.S. 5,301,325) and Ravichandran (U.S. 6,035,120) teach a method for translating a source code of a source processor into a target code of a target processor based on basic blocks and target processor register capability as recited in claims 11 and 21. However, Benson (U.S. 5,301,325) and Ravichandran (U.S. 6,035,120) fail to teach subdividing the first source code blocks into second source code blocks based on target register capability, wherein: a largest number of source registers required in each second source code block being less than or equal to a maximum number of target registers that correspond to the source registers; identifying source register types as data registers or address registers of the source processor and corresponding target registers of the target processor that correspond to each of the source register types; selecting one or more identified source register types and one

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or more maximum numbers of corresponding target registers that correspond to the selected source register types as substantially recited in independent claims 11 and 21.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

11. Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (703) 305-7699 *if calling before October 28, 2004*; otherwise *if calling on or after October 28, 2004*, then the telephone number is (571)272-3730. The examiner can normally be reached on Mondays through Thursdays from 9:00 AM to 6:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki, can be reached on (703) 305-9662. The fax phone number for the organization where this application or processing is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Qamrun Nahar
October 25, 2004

Kakali Chaki
KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100